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ABSTRACT

Current approaches to the research paper rarely emphasize more than secondary research in library collections and data bases. Instructors can help students expand their range of possible information sources by posing three questions: Who is likely to know about this? From where does information on this subject come? and, Who pays for this information? Such an approach distinguishes between knowledge of "data" or discrete facts, and knowledge of "danda," the structure into which facts fit and by which they can be interpreted. It also recognizes that people and organizations, not books or articles, are the ultimate sources of information. As the first step in data gathering, students should consult experts in the field or information offices of professional organizations. These sources can provide information about the field's structure of debate and also help to identify major articles or publications on the issue. Sources of funding are also important because information often can be traced and accessed through its funding source. An awareness of the structural organization of a discipline can also direct students to many print sources that are guides to people and organizations in the structure. This approach to research is intended not to replace but to supplement the traditional bibliographic approach, enabling students to gain rapid access to more current information and to learn structural information that will help them interpret the data they collect. (HOD)

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The Informational Structure of Disciplines: An Approach to Teaching Research

In his recent essay in College English, Richard Larson argues that because the "research paper" is not a specific form of discourse, it should not be taught as if it were.[1] Larson also concludes that because research methods vary considerably from field to field, English teachers should not attempt to teach "general" research skills, particularly because what we have taught in the past has reflected the requirements and limitations of humanistic research. Other recent articles, too, have re-assessed the goals and designs of the research assignment, and there appears to be a consensus that research writing--if it is to be taught at all--should involve more than library research and the compilation of data.[2] However the objectives and design of research assignments may change, there will probably continue to be a need for teaching research skills. And while it might be preferable to have specialists in each field transmit the knowledge of their own methods and sources (as various specialists begin to do in Elaine Maimon's Writing in the Arts and Sciences), English faculty can teach an effective overview of information gathering by using an approach that avoids many of Professor Larson's cogent objections.[3]

Current approaches to research emphasize secondary research in library collections and--rarely--data bases. Students are taught to ask, "What is in the library on this topic?" Without much additional work, instructors can help students to pose three additional questions that greatly expand the range of possible sources of information: 1) "Who is likely to know about this?" 2) "Where does information on this subject come from?" and 3) "Who pays for this information?" I would argue that it is possible to empower students to work in many disciplines

CS208038

by teaching them a few general lessons about the informational structure of disciplines. This essay proposes a preliminary model for this type of instruction and offers theoretical support for using such a model.

When students seek out individual articles or short bibliographies, they place an emphasis on facts rather than on the relationships that obtain among facts, theories, and the people and organizations that develop those facts and theories. Stephen Pepper draws a useful distinction between knowledge of "data", discrete facts, and knowledge of "danda", the structure into which facts fit and by which they can be interpreted.[4] Without stretching Pepper's original distinction too far, one could say that while a particular expert's opinion of the safety of nuclear power is a piece of data, the knowledge that there are pro- and anti-nuclear organizations constitutes danda, or information about the structure of fact and opinion in that field of inquiry. Often students' papers are unsatisfactory because they fail to show an understanding that such structures exist and that because of its source in the structure of a discipline, data may have more or less validity, or reliability, or authority. An introduction to research should explain how to gain access to this structural knowledge as well as to the kind of factual knowledge that is available in standard library resources.

An approach to research that emphasizes danda recognizes that people and organizations are the ultimate source of information, not books or articles. People are likely to be more current than print bibliographies, and people are also better sources of information about the structure of disciplines than the best guides to research. As the first step in data gathering, students should be encouraged to consult experts in the field or the information offices of professional organizations. The value of this approach can be represented schematically by the pyramid below (please see Figure 1, page 3).

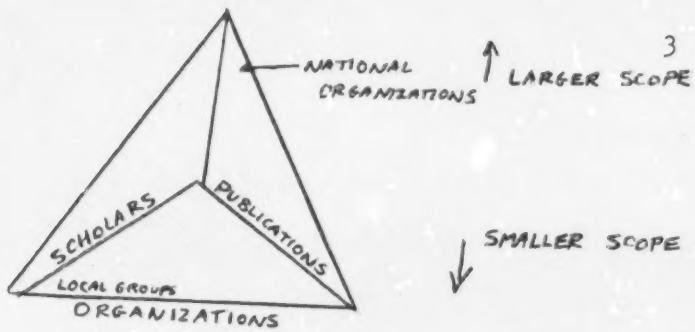

Figure 1. Schematic Representation of the Structure of a Discipline

At the base of the pyramid are individual members of local organizations (or local chapters), beginning scholars, and articles that are limited in scope because they study particular cases intensively. Higher in the three triangles are major national organizations (and their information staffs), senior scholars current in their fields, and major studies and review articles. Student research papers often go astray because they attempt to relate several "low level" sources that have little or no common ground. Papers also run into difficulty because they draw on sources that are not even part of a discipline's structure, such as articles from the yellow press or the pronouncements made by authority figures in other fields. By contrast, the object of a beginning researcher's quest for data should be to locate a current, higher level source, such as a senior scholar, the information staff of a professional organization, or a select bibliography with annotations. These sources can provide information about the structure of debate in the field and also help to identify major studies, review articles, or groups of publications about the same issue. If a student can find a higher level print source of information, such as a good select bibliography or a recent review article, she may not need to consult experts. Far too often, however, the end product of the library search is a group of unrelated articles, not a collection of up-to-date studies of the same topic.

The questions "Where does information come from?" and "Where can information about this subject be found?" call for a description of the structure of a

discipline, not for an introduction to the principal bibliographies, abstracts, and data bases, resources that are strong on data but weak on danda. A simple general model of the information structure of disciplines is produced in Figure 2 on page 5. Sources of funding are listed at the top of the diagram; these are important because information can often be traced and accessed through its funding source, as government-funded research reports are often available through the National Technical Information Service and the Government Printing Office, and as foundation research is often published by foundation printing offices.

Under each type of research organization is a short list of typical methods used by that kind of organization for publishing reports and findings. At the bottom of the figure are listed the print resources that can be used to locate organizations in the structure, sources that in some cases can provide an overview of the entire structure. There are two important facts to note here. First, many documents that are available to the public on request are not listed in traditional bibliographies or abstracts because they are not actually published. Similarly, some professional journals are not available in libraries because of limitations on distribution, not to mention limits on library collections and budgets. These restrictions often apply to the membership lists of organizations. Some of these sources of information are only accessible through the structure by contacting members of associations, employees of corporations, government officials, and so on. Second, the list of resources presented here includes many print sources that are guides to people and organizations in the structure rather than to specific publications; in the sense in which I am using the term, these are primarily guides to danda rather than to data. Among these sources are directories of associations; the membership lists of organizations; manufacturer's directories and discipline directories; directories of research

FIGURE 2: An Overview of Where Information Comes From
(How, and how extensively, this chart could be filled out with specific names will vary from field to field.)

	Private Sector (information made available to build good will and sales)	Foundations (access to product through funding agency)	Public Sector (access through info. services or sponsor agency)
FUNDING			

ORGANIZATIONS

1. Inventors, Small Firms internal reports patents news reports	2. Corporations internal reports proposals publications for sale patents	3. Small Publishers reference books catalogues specialty newsletters	4. Large Publishers trade lists journal management offices internal pubs.	5. Lobbies/Professional Associations/Charities/ Churches membership publications trade publications position papers, convention rpts.
6. Foundations publishing offs. catalogues info.offices	7. Think Tanks internal rpts. articles/books publications for sale	8. University Depts. internal rpts. articles books, funded research rpts.	9. University Research Centers journals, monograph series	10. Government: Federal, State, Local, Regional, Extra-and Quasi-Governmental Agencies. access through government libraries and publishing and information offices, individual officials.

ACCESS METHODS

Patent Office

Letters of Inquiry

Survey Forms

Membership Lists
separately bound or in journals

Directories of Research in Progress
Special field indexes or periodical notes of work in progress, funding announcements

Directories of Assns.

Directories of Research Centers

Bibliographies

Publications Lists

Citation Indexes

Directories of Persons

Natl Tech Info Service
Dept. of Commerce

National Referral Service
Library of Congress

Professional Networks

Government Manuals

Legislative Directories

State/Local/Regional Directories

Industry Directories
in journals and as separate pubs.

Telephone Books
government, special constituency

Directories to Conventions
periodical

Indexes of Presentations
e.g. Bell Labs in-house index

On and Off Line Data Searching Services
special data bases for individual fields

in progress and directories to the research interests of individuals and organizations; telephone books, including special constituency telephone books; federal, state, and local government manuals and legislative directories; periodical directories of conventions and their proceedings; indexes of in-house seminars and presentations; the National Referral Service of the Library of Congress; and all the special directories and guides to organizations published not by associations themselves but by companies and foundations such as G.K.Hall, Bowker, Marquis Who's Who, Gale Research, and the California Institute of Public Affairs. The best of the directories produced by publishers of reference books indicate the positions taken by the organizations they describe, as well as publications, officers, budgets, regional offices, dates of organization and other information. An example in the humanities would be guides to journals and their editorial policies, such as Donna Gerstenberger and George Hendrick's Directory of Periodicals Publishing Articles in English and American Literature and Language. To cite a few additional examples, there are comprehensive directories of this type that describe the organizations and agencies concerned with U.S. and international policies on energy, the environment, human rights, world population, prison reform, the world food and water crises, nuclear power, and women's issues, as well as less crisis-oriented guides to scientific fields, the media, museums, mass transit, auto manufacturers, banks, and so on. In some cases, there are several guides to a single discipline and even regional guides, such as the California Handbook. A full model of the informational structure of a particular discipline would include specific information about organizations, journals, bibliographies, reviewing media, and their scopes and reputations. Interested readers can test the strengths and limits of this approach by consulting one of the guides mentioned above.

Given an awareness of this general structure, students can be taught to ask, "Where can I find a local expert in this field?" If a local specialist can be found, the student can then ask questions about recent trends, current debates, other experts and organizations, and good sources of print information and their locations.

This approach to research is not intended to replace the traditional bibliographic approach, but to supplement and enrich that method by enabling students 1) to gain rapid access to more current information than is sometimes available in libraries and 2) to learn structural information that will help them to interpret the data they collect. Class discussion of the structure stimulates students to identify relationships between their topics and what they already know about sources of information outside the campus library. As a result, this method helps students to use interviews, telephone calls, and letters of inquiry in their data gathering, and it also frees students to attempt prospective as well as retrospective research.

By teaching a subject-index based research technique, we emphasize discrete factual contributions to knowledge and underplay both original research and danda. Two authors recently suggested that students can learn about scholars' interdependence and identify major contributors to a field by charting patterns of citation, using citation indexes as first line research tools.[5] The approach outlined here emphasizes institutional connections in order to make the point that locating a scholar or an organization and understanding its place in the structure of a discipline can be as useful as finding a good review article or select bibliography. Composition or research writing classes do not have time to review the bibliographic materials and research methods appropriate to more than one or two disciplines; time can be found, however, to show students what the informational structure of disciplines looks like and to supplement traditional bibliographic training with an introduction to the print resources

that help professionals to find each other and share their expertise. Instruction in this method takes only a few hours, and in most urban areas students will be able to find experts or organizational contacts who are willing to be of assistance. Advanced students can be made aware that several long distance telephone calls to scholars in their fields will cost about as much as a computer data search and might produce more useful and more focused results.

ENDNOTES

[1] Richard L. Larson, "The 'Research Paper' in the Writing Course: A Non-Form of Writing," College English, 44, No. 8 (1982), 811-816.

[2] Robert A. Schwegler and Linda K. Shamoon, "The Aims of the Research Paper," College English, 44, No.8 (1982), 812-824.; James E. Ford and Dennis R. Perry, "Research Paper Instruction in the Undergraduate Writing Program," College English 44, No. 8 (1982), 825-831.; my own essay forthcoming in College Composition and Communication discusses revisions to the traditional introduction to research.

[3] Elaine Maimon et al., Writing in the Arts and Sciences, (Cambridge, Mass.: Winthrop, 1981).

[4] Stephen C. Pepper, World Hypotheses: A Study in Evidence, (Berkeley: University of California Press, 1942 (rpt. 1966)), passim.

[5] John MacGregor and Raymond C. McInnis, "Integrating Classroom and Library Research," JHE, 48, No. 1 (1977), 17-37.